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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,996	04/02/2004	Takashi Araki	040356-0509	7272

22428 7590 06/27/2005

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3000 K STREET NW  
WASHINGTON, DC 20007

EXAMINER
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HOANG, JOHNNY H

ART UNIT	PAPER NUMBER
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3747

DATE MAILED: 06/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/815,996	ARAKI, TAKASHI	
	<b>Examiner</b>	<b>Art Unit</b>	
	Johnny H. Hoang	3747	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 April 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 13 and 14 is/are rejected.
- 7) ☒ Claim(s) 9-12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>04/02/04</u>  | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 13, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Tomisawa et al (US 5,586,537).

Regarding claims 1, and 2, the reference of Tomisawa et al discloses a fuel property detecting apparatus for internal combustion engine including the following subject matters:

a combustion adjusting device (control unit 12) which adjusts a combustion-related element (fuel injection) of the internal combustion engine;

a sensor which detects a parameter related to a specific gravity of a fuel burnt by the internal combustion engine (col. 6, line 49 through col. 7, line 43); and

a programmable controller programmed (CPU) [col. 6, lines 49-60] to:

correct a target value of the element which has been defined with respect to a reference fuel, based on the parameter (above discussions); and

control the combustion adjusting device (control unit 12) so that the target value is realized (above discussions).

Regarding claim 3, the reference of Tomisawa et al further discloses the control unit 12 controlling the operation of the fuel injection valve (col. 5, line 61 through col. 6, line 3).

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Regarding claim 4, the reference of Tomisawa et al further discloses the fuel is introduced into the fuel injection valve is regulated at predetermined pressure level by means of a pressure regulator (col. 5, lines 43-60).

Regarding claims 13, and 14, as rejected as the same discussions of claim 1.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomisawa et al. The reference of Tomisawa et al discloses all limitations as above discussions.

Furthermore, the reference of Tomisawa et al discloses the step of correcting coolant-temperature dependent increasing-correction factor etc. based on fuel volatility (see Figs. 3-4).

However, the reference of Tomisawa et al does not disclose a compression end in-cylinder temperature.

It would have been an obvious to one of ordinary skill in the art at the time the invention was made to have utilized the internal combustion engine being operating with the temperature in the engine 1 (col. 6, lines 18-21) would include a compression end in-cylinder temperature.

5. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomisawa et al. in view of Shirakawa (US 6,886,334 B2).

Regard claim 6, the reference of Tomisawa et al discloses all the claimed limitations as discussed above except for the variable nozzle. The reference of Shirakawa further discloses the

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variable nozzle 53 (see Figs. 1, and 32). It would have been an obvious to one of ordinary skill in the art at the time the invention was made to modify and/or provide the method of Tomisawa et al with the variable nozzle, as taught by Shirakawa in order to reduce the nozzle opening when the rotation speed of engine is slow.

Regarding claim 7, the reference of Tomisawa et al discloses all the claimed limitations as discussed above except for an intake air swirl.

However, the reference of Shirakawa discloses a combustion control of diesel engine including an intake valve and swirl control valve are provided in an intake port leading from the intake manifold to each cylinder (col. 4, lines 12-17).

Therefore, it would have been an obvious to one of ordinary skill in the art at the time the invention was made to modify and/or provide the method of Tomisawa et al with an intake valve with a swirl control valve, as taught by Shirakawa in order to provide an improved operation of the fuel injection with an intake air swirl in the apparatus for operating an internal combustion engine.

Regarding claim 8, the reference of Tomisawa et al further discloses a throttle 4 is provided at respective branch pipe of the intake manifold 5 (Fig. 2, and col. 5, lines 33-42).

#### ***Allowable Subject Matter***

6. Claims 9-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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**Conclusion**

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Johnny H. Hoang whose telephone number is (571) 272-4843. The examiner can normally be reached on Monday - Thursday (7:00Am-5: 30Pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Yuen can be reached on (571) 272-4856.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JHH  
June 20, 2005

Johnny H. Hoang  
Examiner  
Art Unit 3747

*Tony M. Argenbright*  
**Tony M. Argenbright**  
Primary Examiner  
Art Unit 3747